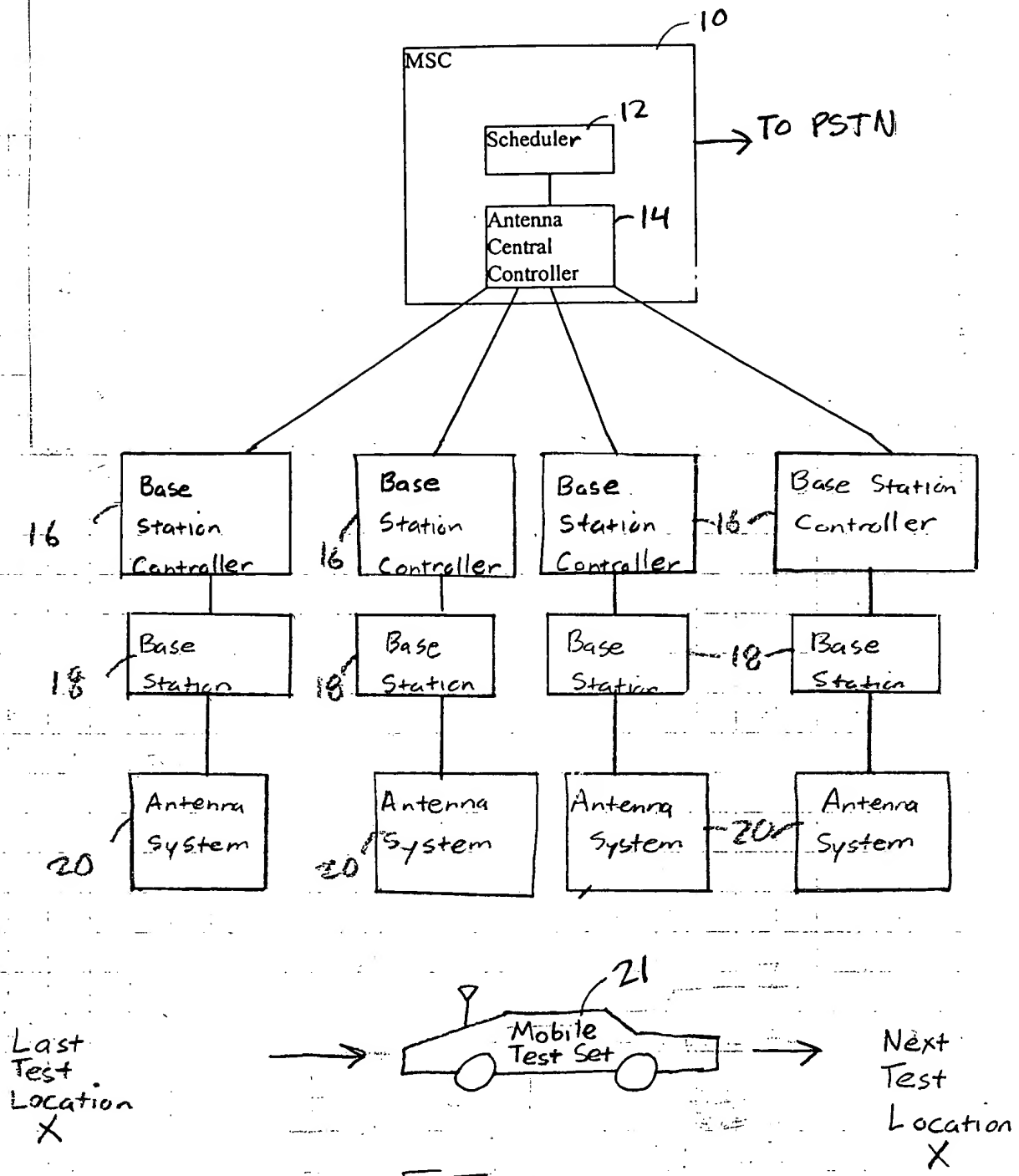
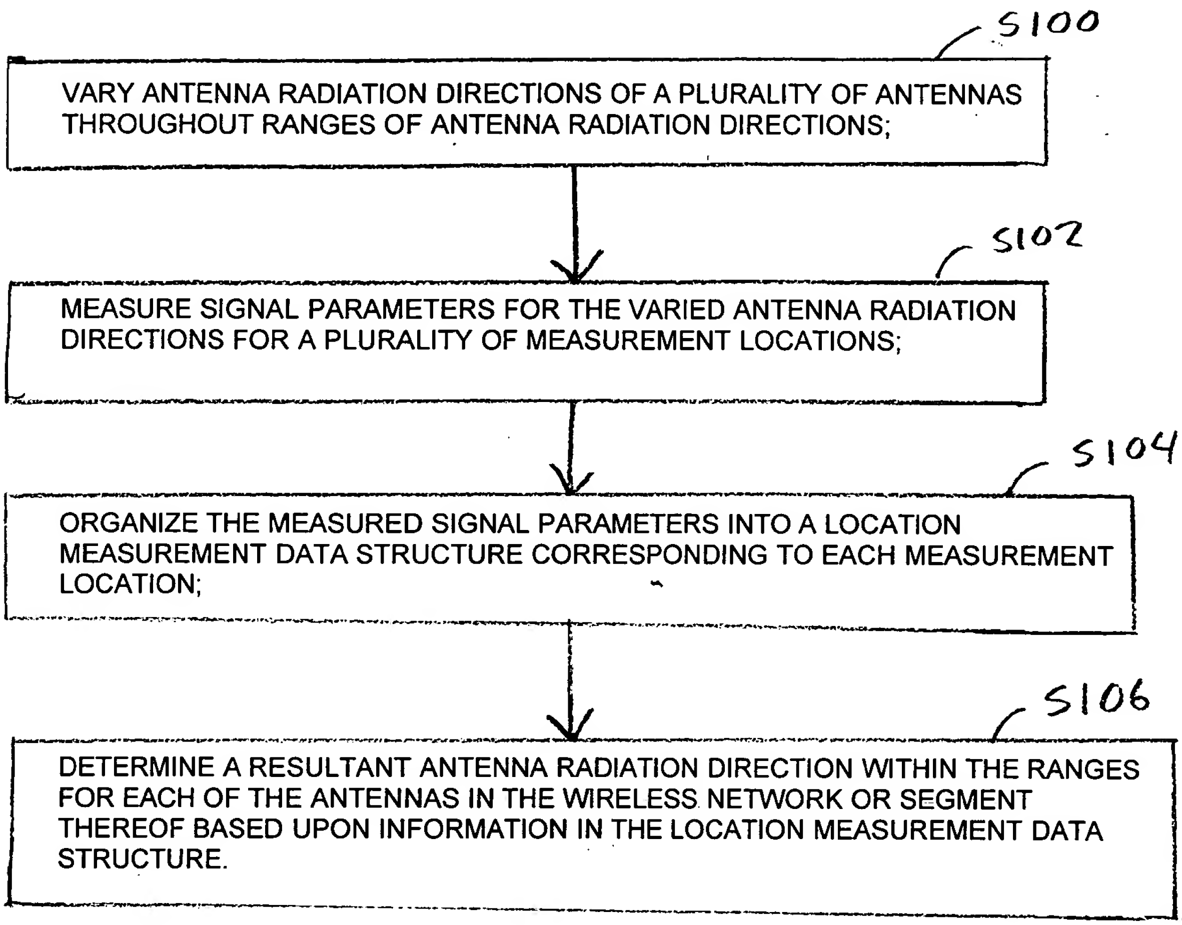


FIG. 1

2925-248P

FIG. 2



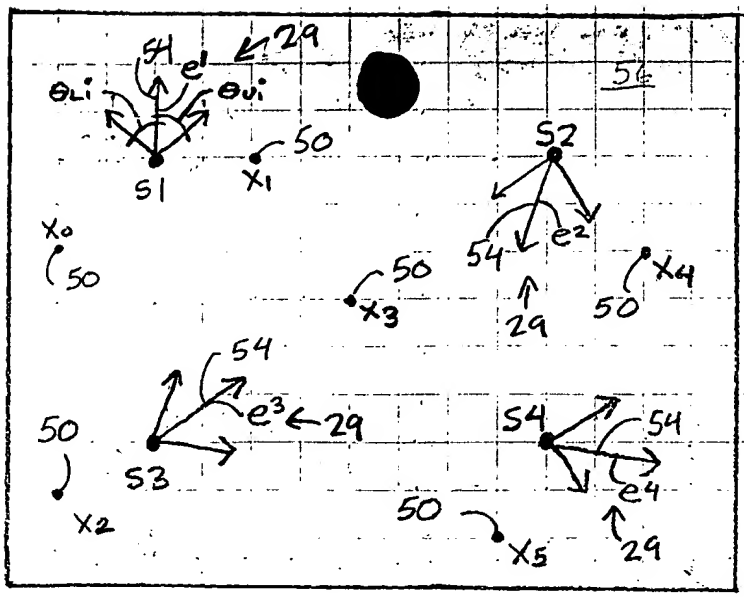


FIG. 3A

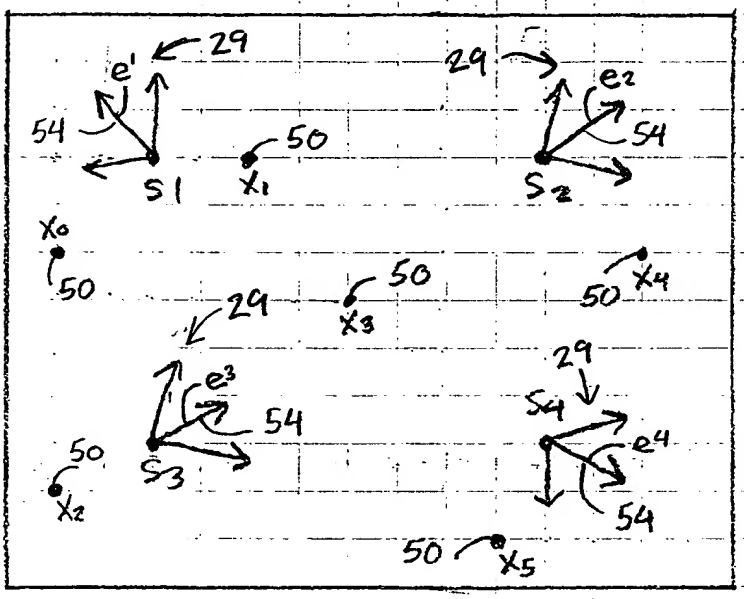


FIG. 3B

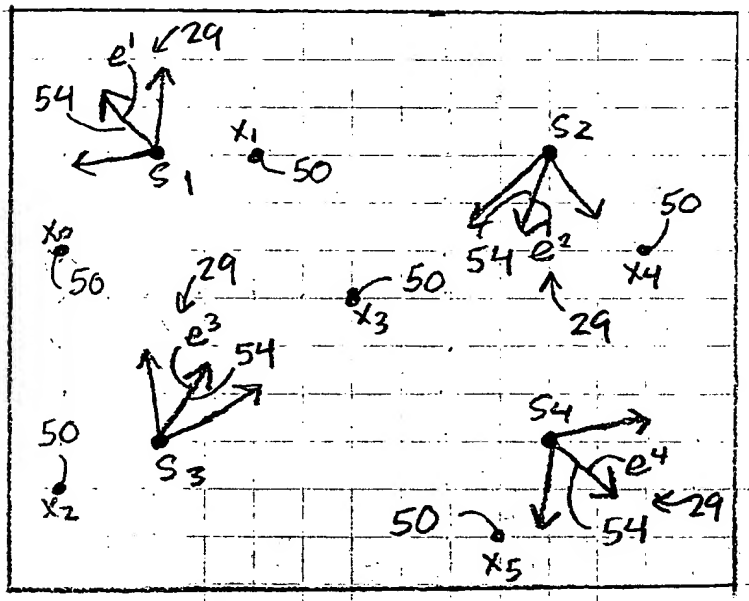


FIG. 3C

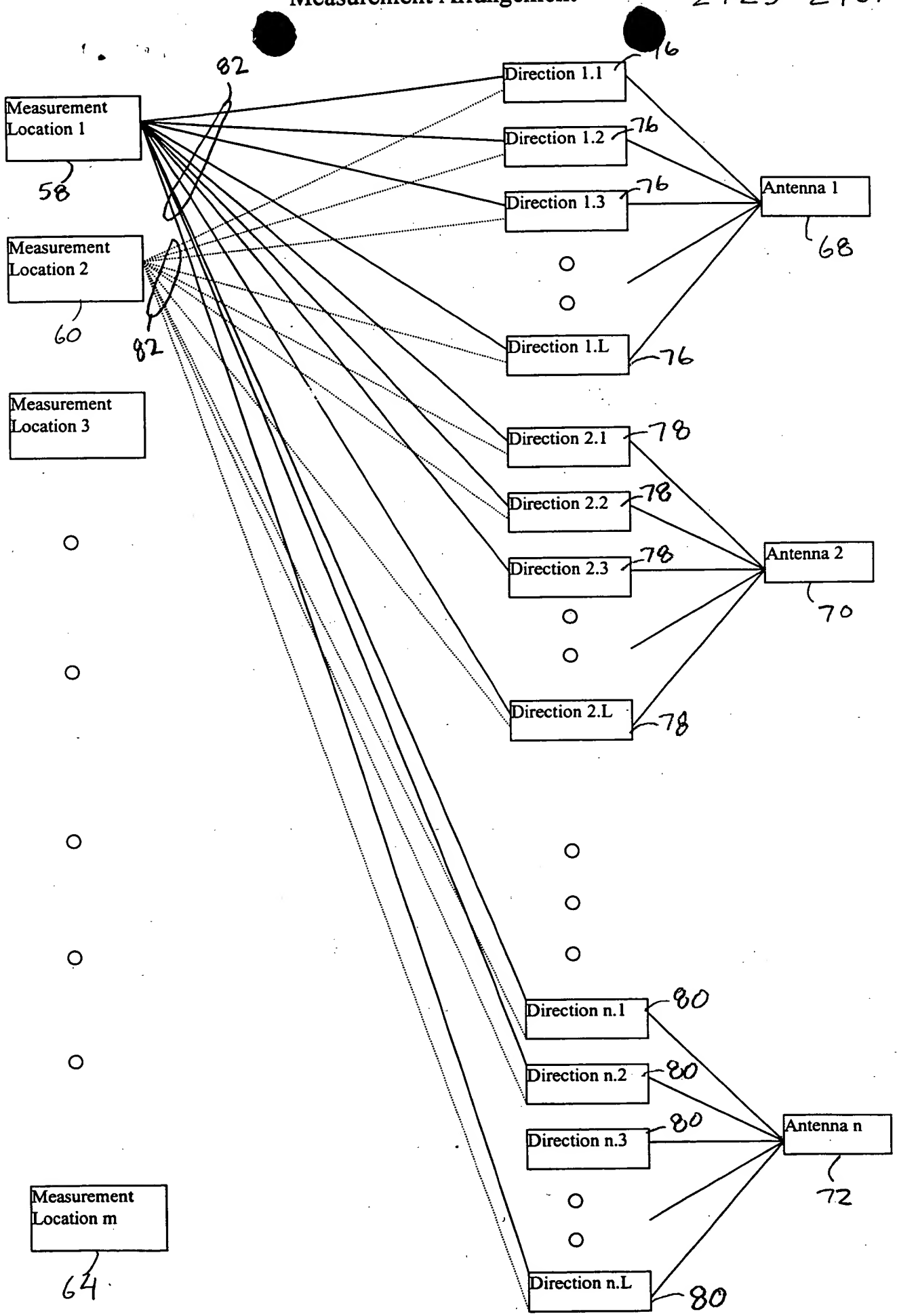

Measurement Arrangement
Measurement Location 1
58
Measurement Location 2
60
Measurement Location 3
Measurement Location m
64
82
82
Direction 1.1
Direction 1.2
Direction 1.3
Direction 1.L
76
Antenna 1
68
Direction 2.1
Direction 2.2
Direction 2.3
Direction 2.L
78
Antenna 2
70
Direction n.1
Direction n.2
Direction n.3
Direction n.L
80
Antenna n
72

FIG. 4

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FIG. 5

100

$$\begin{pmatrix} S_1(x, e_1^1) & S_1(x, e_2^1) & \cdots & \cdots & S_1(x, e_q^1) \\ S_2(x, e_1^2) & S_2(x, e_2^2) & \cdots & \cdots & S_2(x, e_q^2) \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ S_n(x, e_1^n) & S_n(x, e_2^n) & \cdots & \cdots & S_n(x, e_q^n) \end{pmatrix}$$

Interference Measurement

$$\begin{pmatrix} S_2(x^1,e_1^2) & S_2(x^1,e_2^2) & \cdots & \cdots & S_2(x^1,e_q^2) \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ S_n(x^1,e_1^n) & S_n(x^1,e_2^n) & \cdots & \cdots & S_n(x^1,e_q^n) \end{pmatrix} =$$

first test location measurement matrix of signal strength served by antenna $i=1$

102 →

$$\begin{pmatrix} S_1(x^m,e_1^1) & S_1(x^m,e_2^1) & \cdots & \cdots & S_1(x^m,e_q^1) \\ S_2(x^m,e_1^2) & S_2(x^m,e_2^2) & \cdots & \cdots & S_2(x^m,e_q^2) \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ S_n(x^m,e_1^n) & S_n(x^m,e_2^n) & \cdots & \cdots & S_n(x^m,e_q^n) \end{pmatrix} =$$

last test location measurement matrix of signal strength served by antenna $i=1$

$$\begin{pmatrix} N_1(x^1,e_1^1) & N_1(x^1,e_2^1) & \cdots & \cdots & N_1(x^1,e_q^1) \\ N_2(x^1,e_1^2) & N_2(x^1,e_2^2) & \cdots & \cdots & N_2(x^1,e_q^2) \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ N_n(x^1,e_1^n) & N_n(x^1,e_2^n) & \cdots & \cdots & N_n(x^1,e_q^n) \end{pmatrix} =$$

first test location measurement matrix of background noise

104 →

$$\begin{pmatrix} N_1(x^m,e_1^1) & N_1(x^m,e_2^1) & \cdots & \cdots & N_1(x^m,e_q^1) \\ N_2(x^m,e_1^2) & N_2(x^m,e_2^2) & \cdots & \cdots & N_2(x^m,e_q^2) \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ N_n(x^m,e_1^n) & N_n(x^m,e_2^n) & \cdots & \cdots & N_n(x^m,e_q^n) \end{pmatrix} =$$

last test location measurement matrix of background noise

FIG. 6

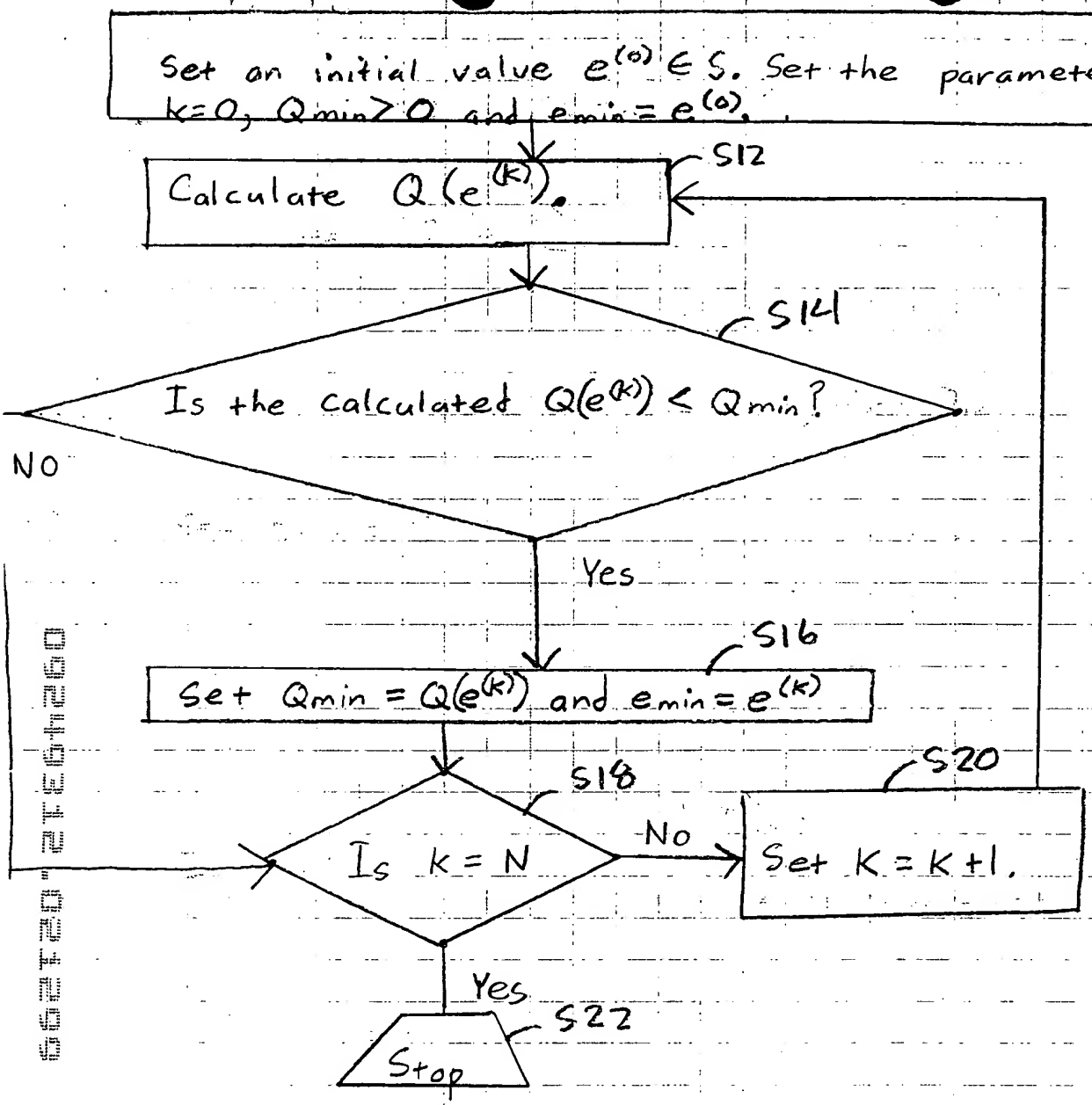
Set an initial value $e^{(0)} \in S$. Set the parameter $k=0$, $Q_{min} > 0$ and $e_{min} = e^{(0)}$.
S10
Calculate $Q(e^{(k)})$.
S12
Is the calculated $Q(e^{(k)}) < Q_{min}$?
S14
NO
Yes
Set $Q_{min} = Q(e^{(k)})$ and $e_{min} = e^{(k)}$
S16
Is $k = N$
S18
No
Set $K = K+1$.
S20
Yes
Stop
S22

FIG. 7

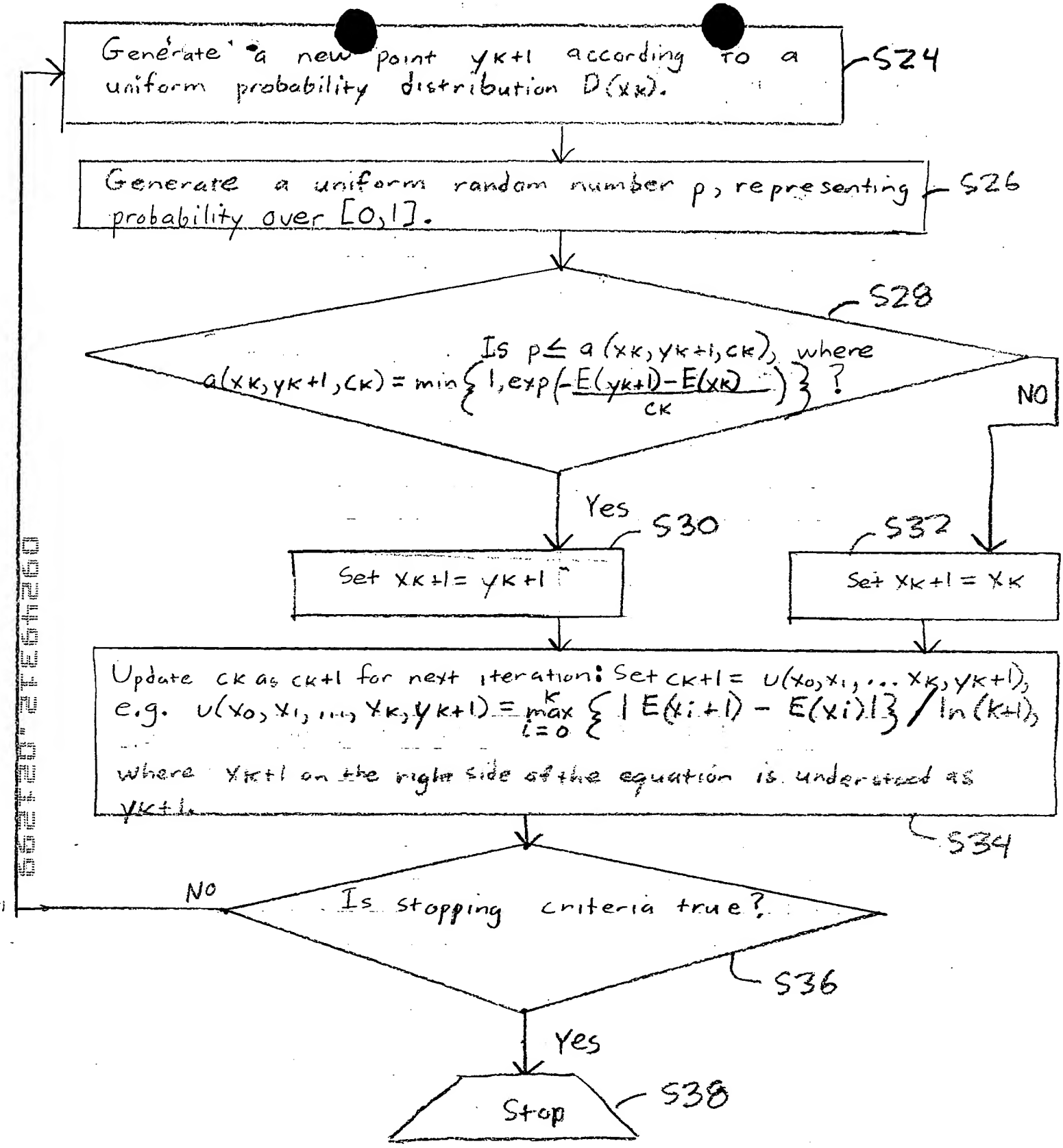
Generate a new point y_{k+1} according to a uniform probability distribution $D(x_k)$.
S24
Generate a uniform random number p, representing probability over [0,1].
S26
S28
Is $p \leq a(x_k, y_{k+1}, c_k)$, where $a(x_k, y_{k+1}, c_k) = \min\{1, \exp(-\frac{E(y_{k+1}) - E(x_k)}{c_k})\}$?
NO
Yes
S30
Set $x_{k+1} = y_{k+1}$
S32
Set $x_{k+1} = x_k$
Update c_k as c_{k+1} for next iteration: Set $c_{k+1} = U(x_0, x_1, \ldots x_k, y_{k+1})$, e.g. $U(x_0, x_1, \ldots, x_k, y_{k+1}) = \max_{i=0}^{k} \{|E(x_{i+1}) - E(x_i)|\} / \ln(k+1)$, where y_{k+1} on the right side of the equation is understood as y_{k+1}.
S34
Is stopping criteria true?
NO
S36
Yes
Stop
S38

FIG. 8

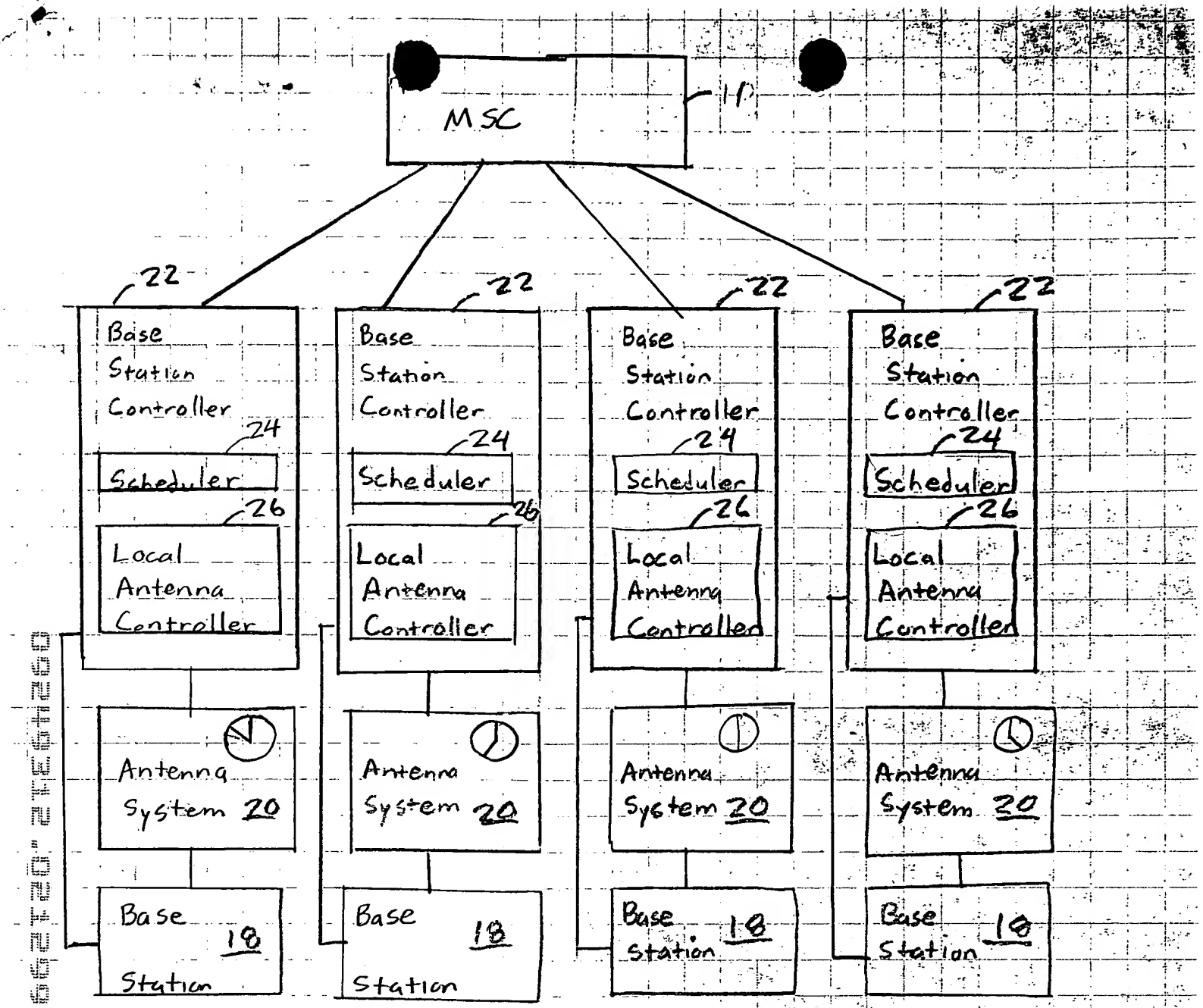
MSC
14
22
Base Station Controller
24
Scheduler
26
Local Antenna Controller
Antenna System 20
Base Station 18
22
Base Station Controller
24
Scheduler
26
Local Antenna Controller
Antenna System 20
Base Station 18
22
Base Station Controller
24
Scheduler
26
Local Antenna Controller
Antenna System 20
Base Station 18
22
Base Station Controller
24
Scheduler
26
Local Antenna Controller
Antenna System 20
Base Station 18

FIG. 9